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ABSTRACT

Although the structured tutoring model was designed to cope with the unique learning characteristics of low achieving primary grade children who are considered high risks in terms of failure, structured tutoring can be used to teach most objectives not readily attained by students generally, at any grade level. The best tutors for primary grade children are older elementary school students. These students should be closely supervised by an adult with experience in devising diagnostic criterion-referenced pretests, preparing and maintaining record sheets and instructional materials, and selecting and training student tutors. The adult should be someone other than a classroom teacher. As most interested groups do not have the resources or time to meet the stipulations advocated by the author, he has written a series of tutor guides and manuals and developed several complete tutorial systems. The guides and manuals can be used with tutoring programs at almost any level or in any subject area. The complete tutorial systems are designed for programs in which fifth and sixth graders are teaching first and second graders reading or arithmetic. (RT)

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Grant Von Harrison

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STRUCTURED TUTORING[1]

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Even though the idea of providing students individualized help by having someone tutor the student has been a fairly common practice for years, it has only been in recent years that questions associated with tutoring have been investigated empirically. A review of the literature as late as 1967 failed to produce one reference reporting empirical data supporting the basic assumption that students benefit from being tutored. In spite of no empirical evidence to substantiate the assumed benefits of tutoring students, numerous articles started to appear in the literature in 1967 espousing tutoring as a means of helping students overcome academic difficulties.

A survey of major tutorial programs in 1968 (Thelen, 1968) brought a very interesting point to light. In over 80% of the programs reviewed, the rationale for establishing a tutorial program was the assumed benefits for the tutor, not the benefits for the student being tutored. And yet in no instance was any empirical

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data being collected to substantiate these assumed benefits. And unfortunately only in a couple of instances was any effort being made to collect data to assess what benefits, if any, the students being tutored were realizing.

As is the case with many innovations adopted by educators, sketchy anecdotal data is all that is needed to make a sweeping generalization that the innovation is producing significant results.

In a series of experiments conducted by the author over the past four years (Harrison, 1967, 1968, 1969, 1970 and 1971) several pertinent findings have been substantiated. In essence, the findings have shown that tutoring per se does not benefit students in most instances. While in sharp contrast, it has been demonstrated that if tutoring is approached in a highly structured way students can benefit a great deal from tutoring. This particular approach to tutoring, which is espoused by the author, has become known as <u>structured tutoring</u>.

The procedures and techniques involved in structured tutoring, represent to some extent, principles of learning which have been identified primarily with programmed instruction. In a sense, structured tutoring is an extension of programmed instruction, in which the tutorial procedures are carefully prescribed and conform

to basic tenets of programmed instruction. However, structured tutoring opens up several new dimensions of instruction. It is the first form of individualized instruction capable of truly monitoring oral response. It is also the first form of individualized instruction capable of monitoring the student's behavior while he attempts to solve a problem. Structured tutoring provides a degree of flexibility with instruction that cannot be duplicated with computers. Tutoring techniques and procedures are identified which allow for maximum sensitivity to the individual learning characteristics of the child being tutored so as to maximize learning gains.

Structured tutoring is a teaching technique rather than a set of materials so that the subject matter taught can be determined entirely by the curricular requirements of the school system in which it is used. Preliminary research indicates that this type of tutoring has great potential for individualizing instruction at the primary grade level, and could very possibly provide the answer to the ever-pressing problem of effectively adapting instruction at the primary grade level to individual differences.

In one of his earliest papers, Skinner compared the potential of programmed learning with a private tutor: "...there is constant interchange between program and student ... induces sustained activity ...the student is always busy ... like a tutor, (a program) insists

that a given point be thoroughly understood before the student moves on ... like a tutor presents just that material for which a student is ready ... like a tutor (the program) helps the student to come up with the right answer ... like a private tutor, reinforces the student for every correct response..." (Skinner, B. B., Science, Vol. 128, October 24, 1958).

Thus far, programmed instruction has not lived up to these expectations, and it is becoming obvious that tutoring per se does not automatically result in this type of interaction. Also, most forms of programmed instruction are heavily dependent on reading ability and the ability to work independently, and it has made it extremely difficult to write programs for nonreading students or students who for one reason or another have difficulty working independently. Based on existing research, it would appear that structured tutoring is a possible means of achieving the type of interaction between a learner and instructional material Skinner felt was necessary for effective learning.

The following are the basic elements of the structured tutoring model: (1) Pre-established instructional objectives; (2) A predetermined sequence for introducing the objectives specified; (3) A valid means of assessing mastery of the pre-established instructional objectives; (4) Instructional materials commensurate with the instructional objectives; (5) Validated tutoring techniques and

procedures commensurate with the instructional objectives;
(6) Management procedures capable of making instructional prescriptions for individual students based on pretest performance; (7) Management procedures capable of systematically checking individual student mastery of instructional prescriptions; (8) Management procedures capable of maintaining a record of when instructional prescriptions are made, the date the student achieves mastery of each instructional prescription and the date subsequent reviews of objectives previously mastered are made; (10) Management procedures capable of insuring that objectives previously mastered are systematically reviewed.

The structured tutoring model can be utilized to teach any objective that can be evaluated empirically. However, the author is of the opinion that only high priority objectives warrant the intense individualized instruction that structured tutoring provides. Secondly, the author suggests that this form of instruction only be one segment (e.g. 1/2 hour) of the total instruction a student receives during the day.

Even though the structured tutoring model was designed to cope with the unique learning characteristics of low achieving primary grade children who are considered high risks in terms of

failure, structured tutoring can be used to teach most objectives not readily attained by students generally, at any grade level. The prime focus of the author's research has been devising structured tutoring procedures that will consistently enhance the probability of success for low achieving primary grade children, however, in addition he has recently done some work with other populations (e.g. university students).

If someone starts to entertain the possibility of providing students individualized help by means of a tutor, the question immediately arises, who will do the tutoring? One thing is obvious, it must be someone who has previously mastered the objectives that are being taught. Secondly, it must be someone who is available. Interestingly enough, availability is the most difficult stipulation to meet. For example, on the surface it would appear that a likely source of tutors for primary grade children would be high school students. However, in most instances high school students do not generally prove to be a good source of tutors for primary grade children because their availability is not consistent enough. It has been found that if a primary grade child is not tutored a minimum of three times per week the effectiveness of the tutoring is almost completely lost. It has been the author's experience that "in-house" tutors (students in the same building) are the best source of tutors. In the case of

primary grade children, older elementary students are the best source of tutors.

Other critical questions that arise deal primarily with supervision and training. The following are some of the basic findings of the author regarding supervision and training: (1) If students between the age of ten and fifteen are being used as tutors, they must work under the supervision of an adult. This adult must have specific expertise in devising diagnostic criterion-references pretests, administering pretests, preparing and maintaining adequate record sheets, preparing and organizing instructional materials, selecting student tutors, training student tutors in the use of general psychological principles of learning and specific tutoring techniques and procedures commensurate with the particular instructional objectives the tutors are assigned to help other students with, making instructional prescriptions, scheduling student tutors, making mastery checks and devising systematic schedules for the reviewing of instructional prescriptions previously mastered. This adult should be someone other than a classroom teacher (e.g. aide, remedial reading teacher); (2) If students sixteen years of age or older or other adults are being used as tutors, they must be trained to do the following: (a) Select appropriate instructional

objectives; (b) devise valid pretesting procedures; (c) prepare appropriate instructional materials; (d) to use established psychological principles of learning commensurate with the specific objectives; (e) maintain adequate records of rate of learning, etc.; (f) to systematically check for mastery; and (g) to systematically review objectives the learner has mastered previously.

In summary the following stipulations must be met in order to insure a high probability that students will benefit from tutoring: (1) The instructional needs of students must be diagnosed very specifically; (2) those doing the tutoring must use instructional materials commensurate with specific instructional needs of a student; (3) those doing the tutoring must be trained in the use of established psychological principles of learning and validated objectives; (4) records must be maintained that report the following: the performance of individual students on specific pretests; a description of each instructional prescription and the date it was made; the date the student achieved mastery of each instructional prescription; the dates when instructional prescriptions previously mastered were reviewed; the performance of individual students on specific criterion tests and the date the tests were administered; (5) If those doing the tutoring are under fourteen years of age, they must work under the

supervision of an adult who has specific expertise; (6) If those doing the tutoring are fifteen years of age or older, they must be trained to do specific things with precision. These basic stipulations constitute structured tutoring and are the stipulations that are not complied with by most tutorial projects.

As a result of extensive experience working with educators interested in setting up a tutorial program based on the structured tutoring model, the author has found that in most instances the interested groups do not have the resources or the time to meet the stipulations advocated by the author. Consequently, for the past two years the author has investigated ways to facilitate the acquisition of the expertise required to setup a tutorial program based on the structured tutoring model. This effort has resulted in the writing of a series of Tutor Guides, manuals, and the development of some complete tutorial systems. The Tutor Guides are designed to be used by adult tutors. One Tutor Guide deals with specific procedures and techniques commensurate with all objectives that involve stimulus response learning. Another deals with specific procedures and techniques commensurate with all objectives that include computation or application of specific rules. The third Tutor Guide deals with specific procedures and techniques for teaching a child to read. The procedures and techniques in each

Tutor Guide are based on research conducted by the author and have been validated in several replicated experiments.

Each Tutor Guide provides very specific instructions on how to do the following: (1) establish and maintain rapport with the student; (2) select appropriate instructional objectives; (3) pretest the student; (4) prepare instructional materials commensurate with specific objectives; (5) maintain appropriate records; (6) use validated tutoring techniques commensurate with specific objectives; (7) use established psychological principles of learning; (8) check for mastery; and (9) systematically review objectives previously mastered.

The manuals are desigend to be used by educators who are setting up a tutorial program that involves having students fourteen years of age or younger tutor other students.

Each manual provides very specific instructions on how to do the following: (1) Select appropriate instructional objectives; (2) Develope pretests; (3) Prepare necessary record sheets; (4) Maintain Profile Sheets on individual students; (5) Prepare and organize instructional materials; (6) Select student tutors; (7) Train student tutors; (8) Make instructional prescriptions; (9) Scheduling student tutors; (10) Develop criterion tests; (11) Monitor student

tutors; and (12) Provide systematic review of prescriptions previously mastered.

The complete tutorial systems developed by the author deal with a cross section of instructional objectives. One system is designed to utilize 5th and 6th graders in teaching 1st graders how to solve sentence equations (e.g. $5 + \square = 7$). One system is designed to utilize 5th and 6th graders in teaching non-reading second graders how to read. One system is designed to utilize 5th and 6th graders in helping other elementary students master any objective that involves stimulus response learning (e.g. the student will be able to produce the sounds of the consonant letters without hesitation when they are presented). One system is designed to utilize 5th and 6th graders in helping other students master high priority objectives that involve computation. (e.g. the student will be able to successfully multiply a two digit number times another two digit number without the use of tables, etc.). By far the most popular tutorial system developed thus far by the author is the tutorial system designed to utilize 5th and 6th grade tutors to teach 1st graders or non-reading 2nd graders to read. This system is currently being used in numerous schools and has proven to be a very effective way to teach low achieving children to read.

The following are the basic components of a tutorial system: (1) Specifications on how to administer pretests and posttests, select student tutors, maintain necessary records, etc.; (2) Pretests, capable of providing a valid measure of the child's ability to deal with the specified instructional objectives; (3) The following record sheets: Individual Profile Sheet, Tutor Assignment Sheet, and the Tutor Log; (4) Tutor Training Materials that include home-study materials for tutors and the trainer's dialogue; (5) Instructional Materials that include flash cards, or practice sheets, or books the tutors use when they work with a learner; (6) Posttests which should be criterion-referenced, prepared in advance of instruction, and must be valid measures of mastery of the objectives; (7) Scope and sequence chart of instructional objectives; (8) An adult supervisor conversant with all the specified management procedures and all aspects of record keeping.

The initial intent of the author was that the guides, manuals and tutorial systems would be completely exportable. However, it has been found that to insure that the tutorial programs are setup according to the specifications of the author, it necessitates having key personnel associated with the program particpate in a workshop.

The workshops are designed to give the participants applied experience with these competencies specified by the author in the Tutor Guides and manuals. The use of the Tutor Guides and manuals in conjunction with an applied workshop have proven highly successful in training interested parties in the use of the specific expertise that is required to set up a tutorial program based on the structured tutoring model.

The time required to train someone depends on the nature of the training. For example an adult or student can be trained to be a tutor in approximately two hours. An adult can be trained to manage an existing tutorial system in one day. However, the time required to train someone to develop a tutorial system, will range anywhere from two days to several days depending on the type of tutorial systems the person is trained to develop.

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